Listing of the Claims:

1. (Currently amended) A steering control device for use in a vehicle having a steering wheel that receives steering input, and an electronically-controlled steering unit that turns the vehicle's wheels over a road surface based on the position of the steering wheel, comprising:

a reaction force device coupled to the steering wheel and responsive to a control signal to apply a steering reaction force to the steering wheel, a value of the control signal ~~calculated based on a formula including~~ equal to a summation of a plurality of terms, the plurality of terms including at least a steering angle term $Kp*\theta$, a steering angle velocity term $Kd*d\theta/dt$ and a steering angle acceleration term $Kdd*d^2\theta/dt^2$; wherein θ is a steering angle of the steering wheel, Kp is a steering angle gain, Kd is a steering angle velocity gain and Kdd is a steering angle acceleration gain;

a hands-free sensor ~~adapted~~ configured to generate a signal indicative of whether the steering wheel is in a hands-on state or a hands-off state; and

a controller ~~adapted to~~ configured ~~vary the control signal in response to the hands-free sensor signal~~ to reduce the steering reaction force applied ~~when~~ if the hands-off state is indicated relative to the steering reaction force applied ~~when~~ if the hands-on state is indicated by using a value of at least one of a coefficient and a gain for ~~a term~~ at least one of the plurality of terms in the ~~formula when~~ summation if the hands-off state is indicated that is different from a value used ~~when~~ if the hands-on state is indicated.

2. (Currently amended) The steering control device of claim 1, further comprising:

a road surface reaction force sensor ~~adapted~~ configured to generate a signal indicative of a road surface reaction force F, the ~~formula~~ plurality of terms including a road surface reaction force term D*Kf*F based the road surface reaction force; and wherein the controller is ~~further adapted~~ configured to reduce the steering reaction force ~~corresponding to the indicated road surface reaction force when~~ if the hands-off state is indicated by using the value of least one of a road surface reaction force coefficient D and a road surface reaction force gain Kf in the road surface reaction force term ~~when~~ if the hands-off state is indicated

that is different from the value used in the road surface reaction force term ~~when~~ if the hands-on state is indicated.

3. (Currently amended) The steering control device of claim 1, further comprising:

a steering angle detection sensor ~~adapted~~ configured to generate a signal indicative of [[a]] the steering angle ~~of the steering wheel~~; and wherein the controller is ~~further~~ ~~adapted~~ configured to reduce the steering reaction force ~~corresponding to the steering angle when~~ if the hands-off state is indicated by using the value of least one of a steering angle coefficient A based on a steering torque and [[a]] the steering angle gain in the steering angle term ~~when~~ if the hands-off state is indicated that is different from the value used in the steering angle term ~~when~~ if the hands-on state is indicated.

4. (Currently amended) The steering control device of claim 1, further comprising:

a steering angle acceleration detection sensor ~~adapted~~ configured to generate a signal indicative of a steering angle acceleration; and wherein the controller is ~~further~~ ~~adapted~~ configured to reduce the steering reaction force ~~corresponding to the steering angle acceleration when~~ if the hands-off state is indicated by using the value of least one of a steering angle acceleration coefficient C based on a steering torque and [[a]] the steering angle acceleration gain Kdd in the steering angle acceleration term ~~when~~ if the hands-off state is indicated that is different from the value used in the steering angle acceleration term ~~when~~ if the hands-on state is indicated.

5. (Currently amended) The steering control device of claim 1, further comprising:

a steering angle velocity detection sensor ~~adapted~~ configured to generate a signal indicative of ~~the~~ a steering angle velocity; and wherein the controller is ~~further~~ ~~adapted~~ configured to reduce the steering reaction force ~~corresponding to the steering angle velocity when~~ if the hands-off state is indicated by using the value of least one of a steering angle

velocity coefficient B based on a steering torque and [[a]] the steering angle velocity gain Kd in the steering angle velocity term ~~when~~ if the hands-off state is indicated that is different from the value used in the steering angle velocity term ~~when~~ if the hands-on state is indicated.

6. (Currently amended) The steering control device of claim 1, further comprising:

a steering torque detection sensor ~~adapted~~ configured to generate a signal indicative of steering torque; and wherein the value of the at least one of the coefficient and the gain is based on the steering torque.

7. (Currently amended) A vehicle having road wheels, comprising:

a steering unit;

an electronically-controlled turning unit responsive to the steering unit that turns the road wheels based on a position of the steering unit;

a steering reaction force applicator ~~adapted~~ configured for applying a steering reaction force to the steering unit, the steering reaction force responsive to a control signal ~~calculated based on a formula including~~ having a value equal to a summation of a plurality of terms, the plurality of terms including at least a steering angle term $Kp*\theta$, a steering angle velocity term $Kd*d\theta/dt$ and a steering angle acceleration term $Kdd*d^2\theta/dt^2$; wherein θ is a steering angle of the steering unit, Kp is a steering angle gain, Kd is a steering angle velocity gain and Kdd is a steering angle acceleration gain;

a hands-free sensor ~~adapted~~ configured for detecting whether the steering unit is in a hands-off state or in a hands-on state; and

a steering reaction force correction component ~~adapted~~ configured for reducing the steering reaction force applied ~~when~~ if the hands-off state is detected relative to the steering reaction force applied ~~when~~ if the hands-on state is detected by using a value of at least one of a coefficient and a gain for ~~a term~~ at least one of the plurality of terms in the ~~formula when~~ summation if the hands-off state is detected that is different from a value used ~~when~~ if the hands-on state is detected.

8. (Currently amended) The vehicle of claim 7, further comprising:

a road surface reaction force sensor ~~adapted~~ configured for detecting ~~the~~ a road surface reaction force F, ~~formula~~ the plurality of terms including a road surface reaction force term D*Kf*F based on the road surface reaction force; and wherein the steering reaction force correction component reduces the steering reaction force ~~corresponding to the road surface reaction force when~~ if the steering unit is in the hands-off state by using a value of least one of a road surface reaction force gain Kf and a road surface reaction force coefficient D in the road surface reaction force term ~~when~~ if the hands-off state is detected that is different from the value used in the road surface reaction force term ~~when~~ if the hands-on state is detected.

9. (Currently amended) The vehicle of claim 7, further comprising:

a steering angle detection sensor for detecting [[a]] the steering angle ~~of the steering unit~~; and wherein the steering reaction force correction component reduces the steering reaction force ~~corresponding to the steering angle when~~ if the hands-off state is detected by using the value of least one of a steering angle coefficient A based on a steering torque and [[a]] the steering angle gain in the steering angle term ~~when~~ if the hands-off state is detected that is different from the value used in the steering angle term ~~when~~ if the hands-on state is detected.

10. (Currently amended) The vehicle of claim 7, further comprising:

a steering angle acceleration detection sensor for detecting ~~the~~ a steering angle acceleration; and wherein the steering reaction force correction component reduces the steering reaction force ~~corresponding to the steering angle acceleration when~~ if the hands-off state is detected[[,]] by using the value of least one of a steering angle acceleration coefficient C based on a steering torque and [[a]] the steering angle acceleration gain in the steering angle acceleration term ~~when~~ if the hands-off state is detected that is different from the value used in the steering angle acceleration term ~~when~~ if the hands-on state is detected.

11. (Currently amended) The vehicle of claim 7, further comprising:

a steering angle velocity detection sensor ~~adapted~~ for detecting a steering angle velocity; and wherein the steering reaction force correction component reduces the steering reaction force ~~corresponding to the steering angle velocity when~~ if the hands-off state is detected by using the value of least one of a steering angle velocity coefficient B based on a steering torque and [[a]] the steering angle velocity gain in the steering angle velocity term ~~when~~ if the hands-off state is detected that is different from the value used in the steering angle velocity term ~~when~~ if the hands-on state is detected.

12. (Currently amended) The vehicle of claim 7, further comprising:

a steering torque detection sensor ~~adapted~~ for detecting steering torque; wherein the value of the at least one of the coefficient and the gain is based on the steering torque.

13. (Currently amended) A device for controlling road wheels of a vehicle comprising:

means for turning the road wheels in response to a steering input of a steering unit;

means for applying a steering reaction force to the steering unit, the steering reaction force responsive to a control signal ~~calculated based on a formula including~~ having a value equal to a summation of a plurality of terms, the plurality of terms including at least a steering angle term $Kp*\theta$, a steering angle velocity term $Kd*d\theta/dt$ and a steering angle acceleration term $Kdd*d^2\theta/dt^2$; wherein θ is a steering angle of the steering unit, Kp is a steering angle gain, Kd is a steering angle velocity gain and Kdd is a steering angle acceleration gain;

means for detecting whether the steering unit is in a hands-on or in a hands-off state; and

means for reducing the steering reaction force from that in the hands-on state ~~when~~ if the hands-off state is detected by using a value of at least one of a coefficient and a gain for ~~a term~~ at least one of the plurality of terms in the ~~formula when~~ summation if the

hands-off state is detected that is different from a value used ~~when~~ in the hands-on state ~~is detected~~.

14. (Currently amended) A method for controlling the road wheels of a vehicle comprising:

turning the road wheels from a steering input via a steering unit;

applying a steering reaction force to the steering unit, the steering reaction force responsive to a control signal ~~calculated based on a formula including~~ having a value equal to a summation of a plurality of terms, the plurality of terms including at least a steering angle term $Kp*\theta$, a steering angle velocity term $Kd*d\theta/dt$ and a steering angle acceleration term $Kdd*d^2\theta/dt^2$; wherein θ is a steering angle of the steering unit, Kp is a steering angle gain, Kd is a steering angle velocity gain and Kdd is a steering angle acceleration gain;

detecting whether the steering unit is in a hands-on or in the hands-off state; and

reducing the steering reaction force applied ~~when~~ if the hands-off state is detected relative to the steering reaction force applied ~~when~~ if the hands-on state is detected by using a value of at least one of a coefficient and a gain for ~~a term~~ at least one of the plurality of terms in the ~~formula when~~ summation if the hands-off state is detected that is different from a value used ~~when~~ if the hands-on state is detected.

15. (Currently amended) The method of claim 14, further comprising;

detecting a road surface reaction force F, wherein the ~~formula~~ plurality of terms includes a road surface reaction force term D*Kf*F based on the road surface reaction force; and

reducing the steering reaction force ~~corresponding to the road surface reaction force when~~ if the hands-off state is detected by using a value of least one of a road surface reaction force gain Kf and a road surface reaction force coefficient D in the road surface reaction force term ~~when~~ if the hands-off state is detected that is different from the value used in the road surface reaction force term ~~when~~ if the hands-on state is detected.

16. (Currently amended) The method of claim 14, further comprising:

detecting [[a]] the steering angle; and

reducing the steering reaction force ~~corresponding to the steering angle when~~ if the hands-off state is detected by using the value of least one of a steering angle coefficient A based on a steering torque and [[a]] the steering angle gain in the steering angle term ~~when~~ if the hands-off state is detected that is different from the value used in the steering angle term ~~when~~ if the hands-on state is detected.

17. (Currently amended) The method of claim 14, further comprising:

detecting a steering angle acceleration; and

reducing the steering reaction force ~~corresponding to the steering angle acceleration when~~ if the hands-off state is detected by using the value of least one of a steering angle acceleration coefficient C based on a steering torque and [[a]] the steering angle acceleration gain in the steering angle acceleration term ~~when~~ if the hands-off state is detected that is different from the value used in the steering angle acceleration term ~~when~~ if the hands-on state is detected.

18. (Currently amended) The method of claim 14, further comprising:

detecting a steering angle velocity; and

reducing the steering reaction force ~~corresponding to the steering angle velocity when~~ if the hands-off state is detected by using the value of least one of a steering angle velocity coefficient B based on a steering torque and [[a]] the steering angle velocity gain in the steering angle velocity term ~~when~~ if the hands-off state is detected that is different from the value used in the steering angle velocity term ~~when~~ if the hands-on state is detected.

19. (Previously presented) The method of claim 14, further comprising:

detecting a steering torque; wherein the value of the at least one of the coefficient and the gain is based on the steering torque.

20. (New) The steering control device of claim 1 wherein the steering angle term includes a steering angle coefficient A, the steering angle velocity term includes a steering angle velocity coefficient B and the steering angle acceleration term includes a steering angle acceleration coefficient C; and wherein a value for each of the steering angle coefficient A, the steering angle velocity coefficient B and the steering angle acceleration coefficient C depends on steering torque.

21. (New) The steering control device of claim 1, further comprising:

a road surface reaction force sensor configured to generate a signal indicative of a road surface reaction force F, the plurality of terms including a road surface reaction force term Kf*F based the road surface reaction force; and wherein Kf is a road surface reaction force gain.

22. (New) The vehicle of claim 7, further comprising:

at least one of a steering angle coefficient A in the steering angle term, a steering angle velocity coefficient B in the steering angle velocity term and a steering angle acceleration coefficient C in the steering angle acceleration term.

23. (New) The vehicle of claim 7 wherein the plurality of terms further comprises a road surface reaction force term Kf*F wherein F is a road surface reaction force and Kf is a road surface reaction force gain.

24. (New) The method of claim 14 wherein the plurality of terms further comprises a road surface reaction force term Kf*F wherein F is a road surface reaction force and Kf is a road surface reaction force gain.

25. (New) The method of claim 24 wherein the steering angle term includes a steering angle coefficient A, the steering angle velocity term includes a steering angle velocity coefficient B, the steering angle acceleration term includes a steering angle acceleration coefficient C and the road surface reaction force term includes a road surface

reaction force coefficient D; and wherein a value for each coefficient depends on steering torque.